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ABSTRACT OF THESIS

COMPUTER LITERACY, ACCESS AND USE OF TECHNOLOGY IN THE FAMILY AND CONSUMER SCIENCES CLASSROOM

For years, schools across the nation have been joining the technology revolution. Today, students have at least some form of technology available to them in school (Roblyer, Castine, & King, 1993; Croxall & Cummings, 2000). This trend is not likely to change, so there is an increasing need for teachers who are literate in the use of the various types of technology. The purpose of this study was to determine if a relationship exists between computer literacy and use of technology, as well as if a relationship exists between teachers' access to technology and their use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky. Teachers were presented with statements regarding computer literacy, access to technology, and use of technology. It was concluded that, when compared to Davis's Conventions for Correlation Coefficient, computer literacy and use of technology had a substantial relationship, while access to technology and use of technology had a moderate relationship.

KEYWORDS: Use, Technology, Computer, Literacy, Access

Dana Renee' Jenkins

3/18/08

COMPUTER LITERACY, ACCESS AND USE OF TECHNOLOGY IN THE FAMILY
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THESIS

Dana Renee' Jenkins

The Graduate School

University of Kentucky
2008

COMPUTER LITERACY, ACCESS AND USE OF TECHNOLOGY IN THE FAMILY
AND CONSUMER SCIENCES CLASSROOM

THESIS

A thesis submitted in partial fulfillment of the
requirements for the Degree of Master of Science in the
College of Agriculture
at the University of Kentucky

By

Dana Renee' Jenkins

Lexington, Kentucky

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Education

and Dr. Tracy Kitchel, Assistant Professor of Agricultural Education

Lexington, Kentucky

2008

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Dedicated to the memory of my dad, David W. Brown, Jr.
Thank you and I love you.

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Chapter I

Introduction

For years, schools across the nation have been joining the technology revolution. Today, students have at least some form of technology available to them in school (Roblyer, Castine, & King, 1993; Croxall & Cummings, 2000). This trend is not likely to change, so there is an increasing need for teachers who are literate in the use of the various types of technology. Mason and McMorow (2006) suggested there are two distinct components to computer literacy, *awareness* and *competence*. Awareness requires that a person have understanding of how computers affect their daily life or society as a whole, and competence requires that a person be able to exhibit a hands-on expertise with a software application. Both of these components should be evaluated when looking at computer literacy within the classroom setting.

In modern classrooms, teachers and students have access to a wide variety of technology. Various types of technology, including computers, projectors, handhelds, televisions, and digital cameras, are more accessible now than ever before. This type of technology, also called instructional technology, has helped move the classroom from a teacher-centered environment to a more student-centered one (Trotter, 1998). Lu and Miller (2002) also stated that instructional technology encompasses a wide variety of technologies, as well as systems used to deliver information. Many Family and Consumer Sciences Education classrooms are integrating technology to help students better understand the concepts that are being taught (Croxall & Cummings, 2000).

While teachers are trying to implement new types of instructional technology into their classrooms, many of them are faced with barriers that hinder their attempts to advance. Beyond mere awareness and competence, anxieties, lack of training, and outdated equipment are barriers that teachers face on a daily basis (Redmann & Kotrlik, 2004; U.S Department of Education, 2000; Keane, 2002; McFadden, Croxall, & Wright, 2001; Croxall, Cummings, 2000; Budin, 1999; Redmann & Kotrlik, 2004). Through various research studies that have been conducted with Family and Consumer Sciences Education teachers, researchers have found that teachers have positive attitudes about

technology (Martin & Lundstrom, 1988; Mehlhoff, 1985; cited in Croxall & Cummings, 2000), despite the barriers they face when trying to become literate in the functioning of the equipment. If the barriers teachers face are addressed, they will be able to fully integrate more technology into the classroom, thus providing students with a variety of learning opportunities and help them to become more “technologically prepared for the future” (Manley, Sweaney, & Valente, 2000, p.27). Computer literacy, in today’s classroom, encompasses the ability to understand and use technology for instructional purposes. Computer literacy can be accomplished several different ways: through self-directed learning, technology training classes or by following a six-phase model developed by Russell (1995), which involves “awareness, learning the process, understanding and application of the process, familiarity and confidence, adaptation to other contexts, and creative application to new contexts” (p. 175).

As teachers develop computer literacy, they will be more likely to use various types of technology to present information to their classes. However, the teacher’s efforts at developing computer literacy and using instructional technology may be hindered by a variety of barriers (Redmann & Kotrlik, 2004; U.S Department of Education, 2000; Keane, 2002; McFadden, Croxall, & Wright, 2001; Croxall, Cummings, 2000; Budin, 1999; Redmann & Kotrlik, 2004). Outdated equipment, lack of time during the day, and inadequate number of computers can complicate a teachers plan for instruction involving technology. Despite these barriers, teachers appear to still want to use technology and are trying to find the means to do so.

Theoretical Framework

The theoretical framework for this study lies within the diffusion of innovations theory. The diffusion process can be defined as “the spread of a new idea from its source of invention or creation to its ultimate users or adopters” (Rogers, 1962, p. 13). According to Rogers and Shoemaker (1971), there are five categories into which adopters fall based upon their innovativeness: laggards, late majority, early majority, early adopters, and innovators. The placements of the five areas of innovativeness are arranged on a bell curve. The adoption process of the diffusion of innovations theory is considered to be a type of decision-making. Rogers (1962) states that “the adoption of an

innovation requires a decision by an individual” (p. 77). The person must begin using a new idea and allow it to replace the previous idea they were using.

The diffusion of innovations theory can be linked back to teacher’s computer literacy, access to and use of technology. By analyzing prior research related to technology, certain indicators are present that indicate a shifts between the five categories of adoption: laggards, late majority, early majority, early adopters, and innovators (Rogers & Shoemaker, 1971). Daulton (1997) found that Family and Consumer Sciences Education teachers’ adoption rate for technology increased from 5 percent in 1983 to 83 percent in 1993. This increase shows that as technology became more common in the school setting, teachers moved from the late majority category to the early adopter category. According to a report published by the National Association of State Boards of Education (NASBE), 63 percent of schools surveyed reported that the majority of teachers used the internet and computers for instruction, but almost one quarter of those schools classified their teachers as “beginners” when using technology. This shows that teachers have the desire to incorporate technology into the classroom (early adopter), but face challenges in acquiring the knowledge to do so.

When trying to determine computer literacy, access to technology and use of technology in classrooms, it is important to look at relative advantage and compatibility of adoptions. Rogers (1995) identifies relative advantage to be “one of the best predictors of an innovation's rate of adoption” (p. 216) because when an innovation is adopted the physical benefits (gains in social status, or savings in time, money or effort) are easily acknowledged (Tornatsky & Klein, 1982). Rogers (1995) also identifies compatibility to be “the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters” (p. 224) and states that it is positively related to adoption. If the innovation is not compatible with the needs, values, or beliefs of the adopter, then they will not see its relative advantage.

Statement of Problem

In the United States, only about one-half of the teaching population has the necessary training to effectively use technology in the classroom such as computers and projectors (Bulkeley, 1997; cited in McFadden, Croxall, & Wright, 2001). This lack of

computer literacy, along with other barriers such as outdated hardware, lack of time, and anxiety, has contributed to the non-use or inadequate use of computers and other technology in the classroom. While research (Alston, Miller, & Williams 2003; Croxall & Cummings, 2000; Lu & Miller, 2002) has been conducted in several states (North Carolina, Virginia, New Mexico, and Ohio) regarding the use of technology in Family and Consumer Sciences Education, there is no known published information on the state of Kentucky. After a review of literature, the following questions arose: How computer literate are Family and Consumer Sciences Education teachers in the state of Kentucky? Do they have access to adequate amounts of technology? How much technology do they use within their classroom? Is there a relationship between computer literacy and the use of technology in Family and Consumer Sciences Education classrooms in Kentucky? Is there a relationship between access to technology and Family and Consumer Sciences Education teachers' use of technology?

Purpose of Study

The purpose of this study was to determine if a relationship exists between computer literacy and use of technology, as well as if a relationship exists between teachers' access to technology and their use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky.

Research Objectives

The objectives for this study were to:

1. Describe the selected demographic characteristics (age, gender, number of teachers in the Family and Consumer Sciences Education program, years of teaching experience, highest education level attained, classes taught, institution where degree was received).
2. Determine computer literacy of Family and Consumer Sciences Education teachers in the state of Kentucky.
3. Determine the access Family and Consumer Sciences Education teachers have to various types of technology.

4. Determine the use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky.
5. Determine the relationship between Family and Consumer Sciences Education teachers' computer literacy and their use of technology in the classroom.
6. Determine the relationship between Family and Consumer Sciences Education teachers' access to technology and their use of technology in the classroom.

Definition of Terms

Adoption- the decision to make full or continued use of an innovation (Rogers, 1962).

Access- the right to obtain or make use of or take advantage of something (http://www.google.com/search?hl=en&defl=en&q=define:access&sa=X&oi=glossary_definition&ct=title).

Computer literacy- consists of two components: an awareness component that requires an individual to have knowledge of how computers affect his/her daily life or society as a whole, and a competence component that requires an individual to demonstrate hands on proficiency with a software application (Mason & McMorrow, 2006, p. 94).

Early adopters: people who are early adopters “blend an interest in technology with a concern for significant professional problems and tasks” (Geoghegan, 1994). These professionals look for new instructional procedures that new technologies may enable.

Early majority: the people who fall into this category are fairly comfortable with the use of technology, but tend to focus more on the concrete problems related to teaching rather than on the technological tools that could be used to address the problems (Geoghegan, 1994).

Educational technology- the use of technology in education to improve learning and teaching. Educational technology is also known as instructional technology or learning technology. (<http://encyclopedia.thefreedictionary.com/educational+technology>).

Innovation-any idea or technology that is new to the individual (Rogers, 1962).

Innovativeness- the degree to which an individual is relatively earlier in adopting new ideas than other members of his social system (Rogers & Shoemaker, 1971).

Innovators: often considered “techies”; they grab on to new technology as soon as it is available. Typically they are more concerned with the actual technology, than the way it can be applied to a specific problem (Geoghegan, 1994).

Instructional technology- instructional technology is the systemic and systematic application of strategies and techniques derived from behavioral, cognitive, and constructivist theories to the solution of instructional problems (<http://www.umich.edu/~ed626/define.html>); the use of technology (computers, compact disc, interactive media, modem, satellite, teleconferencing, etc.) to support learning (<http://www.neiu.edu/~dbehrlic/hrd408/glossary.htm>).

Laggards: this characteristic describes people who are likely to never adapt to the use of information technology in their classroom teachings (Geoghegan, 1994).

Late Majority: people who fall into this category are usually less comfortable with the use of technology, but may accept innovations “late in the game” after the technology has become established among the majority of people (Geoghegan, 1994).

Limitations of the Study

1. The study was limited to Family and Consumer Sciences Education teachers in the state of Kentucky.
2. Time and resources do not allow for a census of Family and Consumer Sciences Education teachers in the United States.

Basic Assumptions

For this study the following assumptions were made:

1. All respondents were certified to teach Family and Consumer Sciences Education in Kentucky.
2. The respondents will be able to read the material (participation letter, questionnaire, etc.) given to them.
3. Respondents responded truthfully and accurately.

Significance of the Problem

While many attempts have been made to determine computer literacy of teachers and use of technology in the general classroom setting, few studies have looked specifically at the Family and Consumer Sciences Education teachers. There is a need for this study because research indicates that Family and Consumer Sciences Education teachers are using the latest technologies to teach their students (Keane, 2002), but they need to be computer literate in order to effectively use the equipment. Manley, Sweaney, and Valente (2000) suggest that an important step in the continuation of integration of technology into the classroom is to determine the computer literacy of Family and Consumer Sciences Education teachers nationally. Once literacy is determined, then plans for addressing various types of training and workshops can be developed. By implementing different types of trainings, teachers will gain a better understanding of what technology is available for their use, how it can affect their classroom, and how to implement it into the daily lessons. These improved skills will help the teacher to more effectively teach Family and Consumer Sciences Education concepts to students, which in turn will help students to be more successful in their acquisition and application of learned knowledge. While this study is only focusing on one state the results could provide some direction to other states or lead to further research.

Chapter II

Review of Literature

Purpose of Study

The purpose of this study was to determine if a relationship exists between computer literacy and use of technology, as well as if a relationship exists between teachers' access to technology and their use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky.

Computer Literacy

Mason and McMorrow (2006) suggested there are two distinct components to computer literacy, *awareness* and *competence*. Awareness "requires an individual to have knowledge of how computers affect his/her daily life or society as a whole", and competence "requires an individual to demonstrate a hands-on proficiency with a software application" (p. 94). Some of the most basic computer literacy skills include using a word processor, email, mailing lists, and the World Wide Web (Evans, 1999; Manley, Sweaney, & Valente, 2000). Computer literacy is even thought to be as important as writing, reading, and math in the school setting (Mehlhoff, 1985; cited in Croxall & Cummings, 2000), as children in today's society have never experienced schools without computers (Robyler, Castine, & King, 1993). These skills are essential in today's school systems as more tasks are completed using computer technologies.

After conducting a study related to technology integration in Career and Technical Education classrooms, Redmann and Kotrlik (2004) had several recommendations as to how teachers can be proactive in their quest to become more computer literate. These included attending workshops and conferences, taking college classes that deal with technology and by engaging "in self-directed learning to stay current with the use of technology in the teaching-learning process" (p. 21). Self-directed learning might include experimenting with equipment, planning lessons using the computer, and exploring various types of software available on the computer and on the internet (Croxall & Cummings, 2000).

Russell (1995) conducted a study that looked at adult students' use of email and developed a six-stage process (p.175) they must go through in order to be email literate. These stages are:

1. Awareness
2. Learning the process
3. Understanding and application of the process
4. Familiarity and confidence
5. Adaptation to other contexts
6. Creative application to new contexts

Once the email users moved through these six stages, the processes needed to use email become invisible to them. These six stages can be used to help teachers develop computer literacy related to different aspects of technology applications.

Eisenberg and Johnson (1996) state that computer literacy needs to include more than just the "how" of using computers; it also needs to focus on the "when" and "why." Through their research, Eisenberg and Johnson developed some suggestions as to what computer literacy should cover. Some of their basic suggestions included being able to identify parts of the computer, creating drafts/final projects using a word processor, and using the internet to search for information. The more advanced suggestions included knowing computer terminology, being able to operate and maintain a computer, having the knowledge to use instructional technology, having the skills to do various programming activities, and having a working knowledge on the impact of technology on society and all that society encompasses.

Research shows that computer literacy is an important component in having the ability to successfully and confidently use technology (Croxall & Cummings, 2000; Eisenberg & Johnson, 1996) within the Family and Consumer Sciences Education classroom. Acquiring the skills to use instructional technology in the classroom is a necessity in today's society (Robyler, Castine, & King, 1993). Russell's (1995) six-stage process can be used to help teachers develop a better understanding of technological applications, as can attending workshops or taking classes that deal with using technology in the classroom (Redmann and Kotrlik, 2004).

Access

For teachers to effectively integrate technology into the classroom, they must have easy access to various types of technology. Alston, Miller, and Williams (2003) found that in North Carolina schools, certain types of technology were widely available for teachers use, meaning the various types of technology were located in the classroom or were easily accessible within the building. These include videotape, television, desktop computer, CD-ROM, internet, email, laser printer, and video camera. Alston et al, (2003) also found that certain types of technology were not easily accessible for teacher use. LCD panel, computer projector, laptop computer, and digital camera were technologies that teachers in North Carolina did not have within their classroom or even within the school.

The internet has become an important resource for classroom activities. For Family and Consumer Sciences Education teachers to be able to use the internet, they must have access to not only a computer, but also a phone line, modem, an internet Service Provider, and training in how to use these types of technology (Cohen, Negrini, Cluff, Laus, Volpe, Dun, & Sternheim, 1999). The teacher would also need to have classroom access to the internet and ideas as to how to guide students in their search for information and use of activities related to Family and Consumer Sciences Education. Recent findings indicate that almost all schools (99 percent) in the United States have internet access and within those schools 87 percent of the individual classrooms have access (U.S. Department of Education, 2005). With easier access to the internet, teachers are better able to implement it use into the classroom instruction.

Eisenberg and Johnson (1996) developed criteria for computer skills based on the Big Six Skills Approach, created by Eisenberg and Berkowitz (1988). The Big Six focuses on task definition, information seeking strategies, location and access, use of information, synthesis, and evaluation. Location and access are important factors when implementing technology into the classroom. The following criteria were developed in regards to location and access (p. 12-13):

1. Locate and use appropriate computer resources and technologies available within the school library media center, including those on the library media center's local area network (e.g., online catalogs, periodical indexes, full-text

sources, multimedia computer stations, CD-ROM stations, online terminals, scanners, digital cameras).

2. Locate and use appropriate computer resources and technologies available throughout the school including those available through local area networks (e.g., full-text resources, CD-ROMs, productivity software, scanners, digital cameras).
3. Locate and use appropriate computer resources and technologies available beyond the school through the internet (e.g., newsgroups, listservs, WWW sites via Netscape, Lynx or another browser, online public access library catalogs, commercial databases and online services, other community, academic, and government resources).
4. Know the roles and computer expertise of the people working in the school library media center and elsewhere who might provide information or assistance.
5. Use electronic reference materials (e.g., electronic encyclopedias, dictionaries, biographical reference sources, atlases, geographic databanks, thesauri, almanacs, fact books) available through intranets or local area networks, stand-alone workstations, commercial online vendors, or the internet.
6. Use the Internet or commercial computer networks to contact experts and help and referral services.
7. Conduct self-initiated electronic surveys through e-mail, listservs, newsgroups and online data collection tools.
8. Use organizational systems and tools specific to electronic information sources that assist in finding specific and general information (e.g., indexes, tables of contents, user's instructions and manuals, legends, boldface and italics, graphic clues and icons, cross-references, Boolean logic strategies, time lines, hypertext links, knowledge trees, URLs, etc.) including the use of:
 - a. Search tools and commands for stand-alone, CD-ROM, networked or Web-based online databases and services;

- b. Search tools and commands for searching the Internet, such as search engines, meta search tools, bots, directories, jump pages, and specialized resources such as those that search the Invisible Web;
- c. Specialized sites and search tool commands that limit searches by date, location, format, collection of evaluated sites or other criteria

The above criteria give insight into the ways in which teachers can access various types of information, resources, and expertise assistance within their school setting. If the teachers do not have adequate experience with technology or do not have the technology readily available, they will be lacking in the above areas.

Access to technology within the school is an important component when implementing its use into the classroom (Alston, Miller, & Williams, 2003). Without adequate access to various types of technology, including computers, internet, and technology experts (Alston, Miller, & Williams, 2003; Cohen, et al, 1999; U.S. Department of Education, 2005), teachers are unable to provide technology-enriched lessons to their students. If Family and Consumer Sciences Education teachers can follow the eight criteria set forth by Eisenberg and Johnson (1996), they will have an easier time accessing resources available to them within their school and community.

Technology Use in the Classroom

Instructional technology is a vital part of Career and Technical Education and “encompasses not only the computer but also other technologies and delivery systems” (Lu & Miller, 2002) that may be used in the classroom. In recent years, there has been an increased emphasis on the integration of technology into curriculum, especially at the high school level (Peake, Briers, & Murphy, 2005). Lu and Miller (2002) described the technology used in the classroom to be in various forms including computers, DVD/VCR players, digital and video cameras, televisions, cooking equipment, and welding equipment. They also describe how classroom technology can help the teacher to use, assess, alter, and present information in a variety of ways.

Research has shown that Family and Consumer Sciences Education teachers’ attitudes towards the use of technology in the classroom are positive (Croxall & Cummings, 2000; Martin & Lundstrom, 1988; Rogers, Thompson, Cotton, & Thompson,

1993). These positive attitudes about computer/technology use have lead teachers to more readily incorporate technology into the classroom in order to enhance student interest and involvement (Schofield, 1995; Croxall & Cummings, 2000; Way & Montgomery, 1995).

For teachers to enhance the learning experiences of their classrooms, they will need to use up-to-date and interactive technologies. The Educational Software Institute (ESI) and Evalutech online offer various software related to Family and Consumer Sciences. These include *Design Your Own Home* for housing and interiors, *Deals on Wheels* for consumer services, *My Amazing Human Body* for nutrition and wellness, and *Cyber Snacks* for food production (Keane, 2002). The internet also serves as a valuable teaching tool, helping to enhance the curriculum through free downloads, interactive websites, and email (McFadden, Croxall, & Wright, 2001).

The internet is an ever-changing entity and it is important that Family and Consumer Sciences Education teachers stay current on what is available to them. According to Manley, Sweaney, and Valente (2000) there are three main reasons why this is important. First, the internet is a very useful tool and can be used to provide hands-on learning experiences for the students. It provides quick and easy access to a wealth of information from around the world. Second, as our culture has become more technologically- orientated, so must our students if they are to live and work in today's society. By incorporating the internet into the classroom, the teacher is helping students learn how to find information and successfully use technology. Third, Family and Consumer Sciences Education teachers are constantly getting new technology and it is up to them to expose their students to it in order for them to be successful in the work force.

There are certain phases teachers go through when incorporating technology into the classroom. Sandholtz, Ringstaff, and Dwyer (1997) created a model describing five phases educators go through when increasing their use of technology. These five phases are:

1. Entry-teachers adapt to changes in physical environment created by technology
2. Adoption-teachers use technology to support text based instruction
3. Adaptation-teachers integrate the use of word processing and databases into the teaching process

4. Appropriation-teachers change their personal attitudes toward technology
5. Invention-teachers have mastered the technology and create novel learning environments

As teachers progress through each of these five phases, they develop a better understanding as to how to use technology in the classroom.

The U.S. Department of Education (2005), along with Smerdon and Cronen (2000), has developed several recommendations as to how technology use can be increased within the classroom setting. These include:

1. Improving the preparation of new teachers in the use of technology
2. Ensuring that every teacher has the opportunity to take online learning courses
3. Improve the quality and consistency of teacher education through measurement, accountability and increased technology resources
4. Ensure that every teacher knows how to use data to personalize instruction. This is marked by the ability to interpret data to understand student progress and challenges, drive daily decisions and design instructional interventions to customize instruction for every student's unique needs.

Through these recommendations, states, districts, and individual schools can develop and have available resources that will allow teachers to expand their knowledge of technology use in the classroom

The teacher standards that are in place in Kentucky include a section on how they expect new and returning teachers to use technology in their classrooms. In order to develop these standards, the Education Professional Standards Board was established in 1990 as a part of the Kentucky Education Reform Act. This agency determines standards in regards to teacher preparation and certification. There are two sets of established standards: new teacher standards and experienced teacher standards. Within both the new and experienced teacher standards, there is a standard that asks teachers to demonstrate implementation of technology within their classrooms. The description of this standard states that “the teacher uses technology to support instruction; access and manipulate data; enhance professional growth and productivity; communicate and collaborate with colleagues, parents, and the community; and conduct research”

(Kentucky Education Professional Standards Board, 1999). The items in this description lead to the performance criterion for this standard as seen in Appendix A.

While teachers may feel technology is important for use in the classroom, many are faced with barriers which have prevented them from effectively implementing available technology into their daily instruction. One of the common barriers teachers may face is technology anxiety (Redmann & Kotrlik, 2004; Bradley & Russell, 1997). Technology given to teachers with little to no experience with the equipment has been shown to produce high levels of anxiety (Budin, 1999; Redmann & Kotrlik, 2004; Lokken, Cheek, & Hastings, 2003). By providing teachers with more training (Croxall & Cummings, 2000), they will feel more comfortable using new technology in their classrooms, thus alleviating their anxiety.

In a survey conducted by the U.S Department of Education (2000), a list was compiled of perceived barriers to proper knowledge and use of technology in the classroom. These barriers included:

1. Not enough computers
2. Outdated, incompatible, or unreliable computers
3. Lack of good instructional software
4. Internet access not easily accessible
5. Concern about student access to inappropriate materials
6. Lack of release time for teachers to learn, practice, or plan ways to use computers or the internet
7. Lack of time in schedule for students to use computers in class
8. Inadequate training opportunities
9. Lack of administrative support
10. Lack of support regarding ways to integrate telecommunications into the curriculum
11. Lack of technical support or advice

Many of these barriers were also voiced in other studies (Croxall & Cummings 2000; Dooley, Metcalf, & Martinez, 1999; Hasselbring, 1991; Sandholtz, Ringstaff, & Dwyer, 1997). Additionally, Rogers et. al., have found that rigid curriculum requirements also prevent Family and Consumer Sciences Education teachers from integrating technology

into their daily classroom activities. Lack of knowledge has also led to the non-use of computer programs and equipment (Keane, 2002; McFadden, Croxall, & Wright, 2001; Lokken, Cheek, & Hastings, 2003).

Various types of technology are more accessible now than ever before. Many Family and Consumer Sciences Education classrooms are integrating technology to help students better understand the concepts that are being taught (Croxall & Cummings, 2000). While teachers are trying to implement new types of technology into their classrooms, many of them are faced with barriers that hinder their attempts to advance (Redmann & Kotrlik, 2004; U.S Department of Education, 2000; Keane, 2002; McFadden, Croxall, & Wright, 2001; Croxall, Cummings, 2000; Budin, 1999; Redmann & Kotrlik, 2004). If the barriers teachers face are addressed, they will be able to fully integrate more technology into the classroom, thus helping students to be more “technologically prepared for the future” (Manley, Sweaney, & Valente, 2000, p.27).

Summary

Computer literacy, in today’s classroom, encompasses the ability to understand and use technology for instructional purposes. Computer literacy can be accomplished several different ways: through self-directed learning, technology training classes and by following a six-phase model developed by Russell (1995). As teachers develop computer literacy, they will be more likely to use various types of technology to present information to their classes. However, the teacher’s efforts at developing computer literacy and using instructional technology may be hindered by a plethora of barriers (Redmann & Kotrlik, 2004; U.S Department of Education, 2000; Keane, 2002; McFadden, Croxall, & Wright, 2001; Croxall, Cummings, 2000; Budin, 1999; Redmann & Kotrlik, 2004). Outdated equipment, lack of time during the day, inadequate number of computers, etc. can complicate a teachers plan for instruction involving technology. Despite these barriers, teachers appear to still want to use technology and are trying to find the means to do so.

Chapter III

Methodology

Purpose of Study

The purpose of this study was to determine if a relationship exists between computer literacy and use of technology, as well as if a relationship exists between teachers' access to technology and their use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky. The objectives for this study were to:

1. Describe the selected demographic characteristics (age, gender, number of teachers in the Family and Consumer Sciences Education program, years of teaching experience, highest education level attained, classes taught, institution where degree was received).
2. Determine computer literacy of Family and Consumer Sciences Education teachers in the state of Kentucky.
3. Determine the access Family and Consumer Sciences Education teachers have to various types of technology.
4. Determine the use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky.
5. Determine the relationship between Family and Consumer Sciences Education teachers' computer literacy and their use of technology in the classroom.
6. Determine the relationship between Family and Consumer Sciences Education teachers' access to technology and their use of technology in the classroom.

Research Design

The design of this quantitative study was descriptive-correlational research. The purpose of correlational research was to look at two or more variables and determine if there was a relationship and to what extent that relationship might be (Ary, Jacobs, & Razavieh, 2002). When using correlational research, there are three main applications that are used: determining relationships, assessing consistency, and prediction.

Population and Sample

The target population for this descriptive-correlational study consisted of middle and high school Family and Consumer Sciences Education teachers in the state of Kentucky ($N = 389$) (Kentucky Department of Education, 2006). A purposive sample was used for the purpose of this study. The sample will consist of all Family and Consumer Science Education teachers attending the Kentucky Career and Technical Education Summer Teacher's Conference held in July. The frame of Family and Consumer Sciences Education teachers was obtained from the Kentucky Department of Education. This frame was appropriate because the study was focusing on Family and Consumer Sciences Education teachers in Kentucky and this was who the frame was comprised of. In addition, several errors were addressed. Frame error occurs when there is a discrepancy in the list of participants (McCracken, 1998). For this study, frame error would occur if a name was left off the list or if a teacher was added to the list who did not teach Family and Consumer Sciences Education. Sampling error was also taken into account during this study. Sampling error is the degree to which the sample differs from the population (McCracken, 1998). For this study, a non-probabilistic sampling technique was used.

Instrumentation

To determine computer literacy, access to technology and the use of technology within Family and Consumer Sciences Education classrooms in Kentucky, it was determined that a questionnaire was the most appropriate and feasible method. The questionnaire, which can be viewed in Appendix B, contained four sections. The first section was designed based on existing research (Peake, Briers, & Murphy, 2005; Alston, Miller, & Williams, 2003; Croxall & Cummings, 2000; Mason & McMorrow, 2006; Kentucky Department of Education, 2006) and inquired into the use of various types of technology in the classroom. A six-point Likert scale was used to rank the responses with the ranking as follows: 6=always; 5=very frequently; 4=occasionally; 3=rarely; 2=very rarely; 1=never. The second section included questions that were designed to determine the teacher's level of computer literacy (Mason & McMorrow, 2006; Lokken, Cheek, & Hastings, 2003). A six-point Likert scale was used to rank the responses with

the ranking as follows: 6=strongly agree; 5=moderately agree; 4=slightly agree; 3=slightly disagree; 2=moderately disagree; 1=strongly disagree. The third section included questions that were designed to determine what types of technology teachers had access to in their classroom or within the school (Alston, Miller, & Williams, 2003; Peake, Briers, & Murphy, 2005; Croxall & Cummings, 2000; Redmann & Kotrlik, 2004). A six-point Likert scale was used to rank the responses with the ranking as follows: 6=strongly agree; 5=moderately agree; 4=slightly agree; 3=slightly disagree; 2=moderately disagree; 1=strongly disagree. The fourth section included demographic information such as age, gender, number of teachers in the program, years teaching experience, highest education level attained, classes taught, and institution where degree was received. Appendix C itemizes each section with the sources they were modified from.

Ary et al. (2002) define validity as “the extent to which an instrument measured what it claimed to measure (p.242).” For this study, face and content validity was determined by using a panel of experts. Face validity can be defined as the having an appearance that is valid for its intended purpose. Content validity can be defined as measuring what the instrument sets out to measure. Seven experts from the Family and Consumer Sciences Education field, including state staff and teacher educators, were asked to review the questionnaire and provide feedback as to what they liked and what they thought should be changed. Once the panel of experts finished with the questionnaire, validity was established.

Reliability is defined as “the extent to which a measure yields consistent results (Ary et al., 2002). For this study, reliability was determined using a pilot group. The pilot group ($n=30$) consisted of Family and Consumer Sciences Education teachers from Missouri. Using Cronbach’s alpha, a reliable coefficient of 0.80 was found for Section I, which was use of technology; a reliable coefficient of 0.77 was found for Section II, which was computer literacy; and a reliable coefficient of 0.88 was found for Section III, which was access to technology. The researcher then did post hoc analysis.

Data Collection

For this research study, it was determined that the questionnaire would be distributed at the Kentucky Career and Technical Education Summer Teachers Conference, which took place in July. Once the questionnaire was received by the researcher, the data was entered into the SPSS program and evaluated.

Data Analysis

To determine the appropriate analysis of the data, scales of measurement were used as guidance. Levels of data may be classified as nominal, ordinal, interval, and ratio. Nominal data is the simplest level of data. This type of data can be categorized, but not ordered. Ordinal data is the next level of data. This type of data can be rank ordered. Interval data is the third level of data. This type of data has no absolute zero and equal differences between values represent equal units. Ratio data is the highest level of data. This type of data has an absolute zero and equal intervals between values (Ary et.al, 2002).

Objective One

Objective one sought to identify selected demographic characteristics of the Family and Consumer Sciences Education teachers selected for the study. The Family and Consumer Sciences Education teachers were asked age, gender, number of teachers in the Family and Consumer Sciences Education program, years of teaching experience, the highest education level attained, courses taught during the 2007-08 school year, and institution where initial certification was received. The characteristics years of teaching experience and number of teachers in the Family and Consumer Sciences Education program are all ratio scale items; therefore, mean scores and standard deviations were reported. Gender is a nominal scale item; therefore frequency and percent were reported. Age is an ordinal scale item; therefore frequency and percent were reported. Highest education level attained is an ordinal scale item; therefore, frequency and percent were reported. Institution where degree was received is an ordinal scale item; therefore, frequency and percent were reported. Courses taught is an ordinal scale item; therefore frequency was reported.

Objective Two

Objective two sought to determine the computer literacy of Family and Consumer Sciences Education teachers in Kentucky. The individual score was interval in nature and therefore, mean and standard deviation were reported. In addition, for each individual item, the frequency and percentage was reported. A grand mean was calculated from the individual items to create a “computer literacy” construct score.

Objective Three

Objective three sought to determine the access Family and Consumer Sciences Education teachers had to technology. The individual score was interval in nature and therefore, mean and standard deviation were reported. In addition, for each individual item, the frequency and percentage was reported. A grand mean was calculated from the individual items to create an “access” construct score.

Objective Four

Objective four sought to determine the use of technology in Family and Consumer Sciences Education classrooms in Kentucky. The individual score was interval in nature and therefore, mean and standard deviation were reported. In addition, for each individual item, the frequencies and percentages were reported. A grand mean was calculated from the individual items to create a “use of technology” construct score.

Objective Five

Objective five sought to determine the relationship between Family and Consumer Sciences Education teachers’ computer literacy and their use of technology in the classroom. To calculate the relationship, the Pearson Product Moment Correlation was calculated. Both computer literacy and use of technology are interval in nature, making Pearson Product Moment Correlation appropriate. An alpha of .05 was established a priori. To interpret correlation, Davis (1971) conventions were adopted (Table 3.1).

Table 3.1

Davis Conventions for Correlation Coefficient

Convention	Correlation Coefficient
Perfect	1.00
Very High	.70 - .99
Substantial	.50 - .69
Moderate	.30 - .49
Low	.10 - .29
Negligible	.01 - .09

Objective Six

Objective six sought to determine the relationship between Family and Consumer Sciences Education teachers' access to technology and their use of technology in the classroom. To calculate the relationship, the Pearson Product Moment Correlation was calculated. Both access and use of technology are interval in nature, making Pearson Product Moment Correlation appropriate. An alpha of .05 was established a priori. To interpret correlation, Davis (1971) conventions were adopted (Table 3.1).

Chapter IV

Findings

Purpose of the Study

The purpose of this study was to determine if a relationship exists between computer literacy and use of technology, as well as if a relationship exists between teachers' access to technology and their use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky. The objectives for this study were to:

1. Describe the selected demographic characteristics (age, gender, number of teachers in the Family and Consumer Sciences Education program, years of teaching experience, highest education level attained, classes taught, institution where degree was received).
2. Determine computer literacy of Family and Consumer Sciences Education teachers in the state of Kentucky.
3. Determine the access Family and Consumer Sciences Education teachers have to various types of technology.
4. Determine the use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky.
5. Determine the relationship between Family and Consumer Sciences Education teachers' computer literacy and their use of technology in the classroom.
6. Determine the relationship between Family and Consumer Sciences Education teachers' access to technology and their use of technology in the classroom.

Objective One

Objective one sought to identify selected demographic characteristics (age, gender, number of teachers in the Family and Consumer Sciences Education program, years of teaching experience, the highest education level attained, institute where degree was received, and courses taught during the 2007-08 school year) of the Family and Consumer Sciences Education teachers in the study. Findings related to years of teaching

experience and number of teachers in the program are in Table 4.2. The average number of years of teaching experience was 13.39 years ($SD = 9.93$). The average number of teachers in a program was 2.53 ($SD = 4.01$).

Table 4.2

<i>Years of Teaching Experience and Number of Teachers in the Program</i>		
<i>Demographic</i>	<i>M</i>	<i>SD</i>
Years of Teaching Experience	13.39	9.93
Number of Teachers in the Program	2.53	4.01

Findings related to gender, age, highest level of education attained and institution where initial certification was received are in Table 4.3. All participants were female ($n = 94$). Of the 94 participants who responded to the question regarding age, 36.2 percent ($n = 34$) were between the ages of 50-59; 19.1 percent ($n = 18$) were between ages 40-49; 14.9 percent ($n = 14$) were between ages 26-30; 13.8 percent ($n = 13$) were between ages 20-25; 11.7 percent ($n = 11$) were between ages 31-39; 4.3 percent ($n = 4$) were 60 and over. For highest level of education attained, 19.4 percent ($n = 18$) of participants had received a Rank III; 47.3 percent ($n = 44$) had received a Rank II; 31.2 percent ($n = 29$) had received a Rank I; and 2.2 percent ($n = 2$) had received some other type of certification. Participants were also asked at which institution they received their initial certification. Of the 93 participants that responded to this question, 12.9 percent ($n = 12$) received certification from Eastern Kentucky University; 28 percent ($n = 26$) from the University of Kentucky; 16.1 percent ($n = 15$) from Morehead State University; 18.3 percent ($n = 17$) from Western Kentucky State University; 9.7 percent ($n = 9$) from Murray State University; 2.2 percent ($n = 2$) from Berea College; and 12.9 percent ($n = 12$) received certification from a school not listed.

Table 4.3

Gender, Age, Highest Level of Education Attained, and Institution where Initial Certification was Received

Characteristic	<i>f</i>	%
Gender		
Female	94	100
Male	0	0
Age		
20-25	13	13.8
26-30	14	14.9
31-39	11	11.7
40-49	18	19.1
50-59	34	36.2
60 and over	4	4.3
Degree		
Rank III	18	19.4
Rank II	44	47.3
Rank I	29	31.2
Other	2	2.2
Institution		
Eastern Kentucky University	12	12.9
University of Kentucky	26	28
Morehead State University	15	16.1
Western Kentucky State University	17	18.3
Murray State University	9	9.7
Berea College	2	2.2
Other	12	12.9

Table 4.4 lists findings related to the classes taught by the participants in the study. Participants were asked to list all classes they would be teaching during the 2007-08 school year. Since teachers provided this information with the names they use for the

courses they teach, and were not given a select from list on the survey, not all course titles were the same. A total of 53 different course titles were listed by the respondents. A comparison of those titles to the list of the 22 approved courses in the Kentucky Family and Consumer Sciences Curriculum

(<http://education.ky.gov/users/jwyatt/CourseList/Family%20and%20Consumer%20Sciences%20v2006.pdf>) was used to create the following table. Sixty five teachers taught FACS Life Skills and was therefore the most commonly listed course. This was followed by 57 teaching Foods and Nutrition; 42 teaching Child/Human Development; and 33 teaching Parenting. One teacher reported teaching Fashion and Interior Design III, as well as Advanced Child and Human Development, which made them the least commonly listed courses. These two courses were followed by three teachers teaching Principles of Hospitality and Fashion and Interior Design II. The six teachers who indicated that they taught middle school were grouped into the category Introductory Life Skills, which is course work geared for middle school students.

Table 4.4

Courses Taught by FCS Education Teachers During the 2007-2008 School Year

<i>Course Name</i>	<i>Frequency</i>
FACS Life Skills	65
Foods and Nutrition	57
Child/Human Development	42
Parenting	33
Relationships	28
Fashion and Interior Design I	26
Child Development Services I	25
Culinary Skills	23
Money Skills	20
Child Development Services II	14
Introductory Life Skills (Middle School)	6
Non-FCS Classes	6
Practical Living	5
Commercial Foods I	5
Principles of Teaching	4
Leadership Dynamics	4
Commercials Foods II	4
Careers	3
Fashion and Interior Design II	3
Principles of Hospitality	3
Advanced Child and Human Development	1
Fashion and Interior Design III	1

Objective Two

Objective two sought to determine the computer literacy of Family and Consumer Sciences Education teachers in Kentucky. Table 4.5 summarizes findings related to computer literacy, as well as the frequency, percent, mean, and standard deviation for

each item. Individual statement frequencies and percentages in relation to the used Likert scale were also calculated and can be found in Appendix D. Participants tended to moderately agree that they had a basic knowledge of computers ($M = 5.38$; $SD = .88$) and that they knew there were various internet tools available for their use ($M = 5.77$; $SD = .53$). Participants slightly agreed that they had a working knowledge of computer terminology ($M = 4.74$; $SD = .94$), that they felt secure in their ability to interpret a computer manual ($M = 3.99$; $SD = 1.20$), and that they felt confident using a computer ($M = 4.95$; $SD = .93$). Participants slightly disagreed that they understood technical aspects of computers ($M = 3.93$; $SD = 1.30$). A grand mean of 4.82 ($SD = .69$) was then calculated for the construct Computer Literacy.

Table 4.5

Computer Literacy as Perceived by FCS Education Teachers in the Study

Statement	<i>f</i>	%	<i>M</i> ^a	<i>SD</i>
I have a basic knowledge of computers.	94	100	5.38	.88
I have avoided computers because they are unfamiliar to me.	94	100	5.04	1.48
I have a working knowledge of computer terminology.	93	98.9	4.74	.94
I understand the technical aspects of computers.	94	100	3.93	1.30
I feel secure about my ability to interpret a computer manual.	94	100	3.99	1.20
I feel confident about using computers.	94	100	4.95	.93
I know there are different internet research tools (Google, Yahoo, etc.) available to use.	94	100	5.77	.53
Grand Mean			4.82	.69

^a Scale (1=strongly disagree; 2=moderately disagree; 3=slightly disagree; 4=slightly agree; 5=moderately agree; 6=strongly agree)

Objective Three

Objective three sought to determine the access Family and Consumer Sciences Education teachers had to technology. Table 4.6 summarizes findings related to computer access, as well as the frequency, percent, mean and standard deviation for each item. Individual statement frequencies and percentages in relation to the used Likert scale were also calculated and can be found in Appendix E. Participants strongly agreed that they had access to a television ($M = 5.99$; $SD = .10$), a DVD/VCR ($M = 5.97$; $SD = .23$), and internet ($M = 5.96$; $SD = .20$) in their school. Participants moderately agreed that they had access to a projector ($M = 5.59$; $SD = 1.09$), a digital camera ($M = 5.62$; $SD = 1.01$), a laser printer ($M = 5.08$; $SD = 1.64$), a desktop computer ($M = 5.87$; $SD = .73$), presentation software ($M = 5.46$; $SD = 1.11$), and reliable internet ($M = 5.41$; $SD = .93$). Participants slightly agreed that they had access to a full page scanner ($M = 4.40$; $SD = 2.00$), a laptop computer ($M = 4.96$; $SD = 1.73$), and effective instructional software ($M = 4.58$; $SD = 1.26$) for the courses that they teach. Participants slightly disagreed that they had an adequate amount of technology to the number of students in their classes ($M = 3.81$; $SD = 1.83$). A grand mean of 5.29 ($SD = .57$) was then calculated for the construct Access to Technology.

Table 4.6

Teachers Access to Various Types of Technology as Reported by FCS Education Teachers in the Study

Statement	<i>f</i>	%	<i>M</i> ^a	<i>SD</i>
I have access to a television.	94	100	5.99	.10
I have access to DVD/VCR.	94	100	5.97	.23
I have access to a projector.	94	100	5.59	1.09
I have access to a digital camera.	94	100	5.62	1.01
I have access to a full page scanner.	92	97.8	4.40	2.00
I have access to a laser printer.	92	97.8	5.08	1.64
I have access to a desktop computer.	94	100	5.87	.73
I have access to a laptop computer.	94	100	4.96	1.73
I have access to presentation software.	94	100	5.46	1.11
I have access to the internet in my school.	92	97.8	5.96	.20
The internet is reliable at my school.	90	95.7	5.41	.93
I have an adequate amount of technology for the number of students in my classes.	93	98.9	3.81	1.83
I have access to effective instructional software for the courses I teach.	92	97.8	4.58	1.26
Grand Mean			5.29	.57

^a Scale (1=strongly disagree; 2=moderately disagree; 3=slightly disagree; 4=slightly agree; 5=moderately agree; 6=strongly agree)

Objective Four

Objective four sought to determine the use of technology in Family and Consumer Sciences Education classrooms in Kentucky. Table 4.7 summarizes findings related to technology use, as well as the frequency, percent, mean and standard deviation for each item. Individual statement frequencies and percentages in relation to the used Likert scale were also calculated and can be found in Appendix F. Participants agreed that they very frequently used email ($M = 5.66$; $SD = .52$), word processing ($M = 5.46$; $SD = .73$), grade programs ($M = 5.90$; $SD = .33$), and internet research tools ($M = 5.15$; $SD = .94$)

when using a computer. Participants agreed that they occasionally used presentation software and to develop materials ($M = 4.96$; $SD = 1.02$) and presentation hardware to present lessons ($M = 4.16$; $SD = 1.52$). The participants also occasionally use computers to create presentations ($M = 4.86$; $SD = 1.37$) and various technologies to support their classroom instruction ($M = 4.97$; $SD = .85$). Participants rarely used a digital camera to create a multimedia presentation ($M = 3.29$; $SD = 1.47$), or a computer to create databases ($M = 3.68$; $SD = 1.70$) or spreadsheets ($M = 3.63$; $SD = 1.65$). Participants stated that they did not very frequently create presentations using a scanner ($M = 2.90$; $SD = 1.39$) or a video camera ($M = 2.69$; $SD = 1.32$). A grand mean of 4.72 ($SD = .69$) was then calculated for the construct Technology Use.

Table 4.7

FCS Education Teachers Use of Various Types of Technology

Statement	<i>f</i>	%	<i>M</i> ^a	<i>SD</i>
I use email on a regular basis.	94	100	5.66	.52
I utilize word processing to develop materials for class.	92	97.8	5.46	.73
I use presentation software (Microsoft Word, PowerPoint, etc.) to develop lessons/units.	92	97.8	4.96	1.02
I use presentation hardware (Projector, Smart Board, etc.) to present lessons, units.	92	97.8	4.16	1.52
I keep track of grades using computers.	92	97.8	5.90	.33
I utilize various internet research tools.	91	96.8	5.15	.94
I create multimedia presentations using a scanner.	93	98.9	2.90	1.39
I create multimedia presentations using a digital camera.	91	96.8	3.29	1.47
I create multimedia presentations using a video camera.	93	98.9	2.69	1.32
I use the computer for word processing.	93	98.9	5.66	.71
I use the computer to create databases.	91	96.8	3.68	1.70
I use the computer to create spreadsheets.	91	96.8	3.63	1.65
I use the computer to access email.	92	97.8	5.90	.29
I use the computer to access the internet.	93	98.9	5.84	.42
I use the computer to create presentations.	93	98.9	4.86	1.37
I use various technologies to support classroom instruction.	93	98.9	4.97	.85
Grand Mean			4.72	.69

^a Scale (1=never; 2=not very frequently; 3=rarely; 4=occasionally; 5=very frequently; 6=always)

Objective Five and Objective Six

Objective five sought to determine the relationship between Family and Consumer Sciences Education teachers' computer literacy and their use of technology in the classroom. Objective six sought to determine the relationship between Family and Consumer Sciences Education teachers' access to technology and their use of technology in the classroom. The relationship between computer literacy and use of technology had a positive correlation of .60 (Table 4.8). When compared to Davis's Conventions for Correlation Coefficient, the relationship between the two areas is substantial. The relationship between access to technology and use of technology had a positive correlation of .45. According to Davis, this relationship is moderate in nature.

Table 4.8

Correlations among Computer Literacy, Technology Use, and Access

	Computer Literacy	Technology Access	Technology Use
Computer Literacy	1	.14	.60
Technology Access		1	.45
Technology Use			1

Chapter V

Conclusion

Purpose of Study

The purpose of this study was to determine if a relationship exists between computer literacy and use of technology, as well as if a relationship exists between teachers' access to technology and their use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky. The objectives for this study were to:

1. Describe the selected demographic characteristics (age, gender, number of teachers in the Family and Consumer Sciences Education program, years of teaching experience, highest education level attained, classes taught, institution where degree was received).
2. Determine computer literacy of Family and Consumer Sciences Education teachers in the state of Kentucky.
3. Determine the access Family and Consumer Sciences Education teachers have to various types of technology.
4. Determine the use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky.
5. Determine the relationship between Family and Consumer Sciences Education teachers' computer literacy and their use of technology in the classroom.
6. Determine the relationship between Family and Consumer Sciences Education teachers' access to technology and their use of technology in the classroom.

Objective 1

Demographic characteristics for this study included age, gender, highest education level attained, and classes taught. These demographics were compared to those of previous studies in relation to FCS education teachers and technology. Several studies indicated that the highest number of respondents were female (Bradley & Russell, 1997; Taylor, et.al., 1999), as was the case with this study. This is a common trend in FCS

education, as women are typically the ones who choose this field of education. In the study by Taylor, et.al. (1999), several similarities were found among the other demographics. In both studies the largest percentage of teachers were over the age of 31 and held degrees higher than a bachelor's/Rank III. Two of the most commonly taught classes for both studies were Foods and Nutrition and Child/Family Development.

Objective 2

Upon completion of the research, it was found that Kentucky FCS Education teachers slightly agreed that they had knowledge related to computer literacy. Computer literacy is an important component in having the ability to successfully and confidently use technology (Croxall & Cummings, 2000; Eisenberg & Johnson, 1996). To help instill this confidence and ability, teachers need to be provided with the opportunity to participate in workshops and conferences that deal with using technology (Redman & Kotrlik, 2004). The teachers need to be proactive in their quest to learn about technology. They need to explore what is available on the internet for their use, plan lessons using the computer, and experiment with various types of technologies to become more comfortable with use. FCS programs, both at the high school and college level, need to incorporate technology into their classroom lessons and teach their students how to understand the terminology.

Objective 3

Upon completion of the research, it was found that Kentucky FCS Education teachers moderately agreed with statements regarding their access to technology. This shows that the technology that is most commonly used in classrooms is easily accessible for the teachers. Most teachers had access to TV, DVD/VCR, projector, desktop computer, printer, and internet. Research conducted by Alston, Miller, and Williams (2003) also found these types of technology to be readily accessible to teachers in North Carolina. By having access to various types of technology within the classroom or school, teachers will be more apt to try and implement them into their daily classroom lessons. More research is needed to determine how schools allocate money for

technology purchases and what type of training they provide to help teachers become more familiar with the new technology.

Objective 4

Upon completion of the research, it was found that Kentucky FCS Education teachers occasionally used certain types of technology that they have available within their classroom or school. The majority of the teachers who participated in the study indicated that they used word processing programs, email, and grading programs on their computers. While these were the three highest areas mentioned, they also used a wide variety of technologies within their classrooms, yet ranked them lower. Our culture has become very technologically oriented, meaning our students are using technology on a regular basis (Manley, Sweaney, and Valente, 2000). By utilizing various types of technologies within the classroom, teachers are better able to meet the learning needs of more students, as well as keep them engaged in the lesson. Teacher education programs should require technology courses for their students, so when they enter the classroom, they are competent in the uses of various technologies. It is also important to look at the access and use of technology students are exposed to both in school and at home. This knowledge will help teacher education programs better prepare their pre-service teachers with resources such as the Kentucky Teacher Standards (Appendix A).

Objective 5 & 6

From the findings, we can see that there is a substantial relationship between computer literacy and the use of technology, while there was a moderate relationship between access to technology and use of technology. These relationships tell us several things about FCS Education. First, teachers have a basic understanding of computer logistics, such as terminology and navigation of programs. This knowledge helps teachers have more confidence when they actually decide to use technologies in their classrooms. Second, teacher preparation programs need to require that their students take a technology class if one is not already required. Technology classes will help the students gain a better understanding not only on how to use technology, but also in how

to interpret the more technical aspects of the technology (i.e., manual, programs). By properly teaching the new FCS Education teachers how to use and understand technology, they will be better able to utilize various technologies when teaching their students. The students can then take what they have learned about technology in the FCS classes and apply it to their other classes and assignments. Finally, access to technology is not always adequate. Many teachers reported that they did not have adequate technology for the number of students in their classes. This limits what they can have their students do, so they may be more apt not to even use technology to teach their lessons. By providing technology grants to teachers, this problem will hopefully one day be a thing of the past.

Implications and Recommendations for Future Research

One of the issues that was encountered during the course of the research was the issue of class names as reported by the teachers who participated in the study. Often times, the identity of FCS is unclear and “not branded” because of the inconsistency in what teachers call the classes they teach. When the course names were first evaluated, there were 52 different course titles. These were then condensed into 22 categories, based on the Kentucky Valid Course List, which was retrieved from the Kentucky Department of Education. Further research is needed to determine how Kentucky FCS Education teachers determine what their class names will be, why they chose names that are not on the Valid Course List, and how they determine what curriculum will be taught.

Another issue that was encountered dealt with the questionnaire itself. After the pilot group returned their questionnaires, each section was evaluated for reliability using Cronbach’s alpha. The reliability rates were lower than anticipated with use at .80, computer literacy at .77, and access at .88. It is recommended that the instrument needs to be reevaluated and tightened for the purpose of replication.

Further research is also needed to compare the computer literacy, use, and access to technology of FCS teachers in Kentucky and nationally with other CTE teachers and academic core teachers. This could help to assist schools in equalizing resources and access to technology between their teachers and school buildings. They would also have

a better grasp as to what types of trainings they may want to offer as professional development to help improve the teacher's competencies in relation to technology.

Based on the research, the following recommendations for future research can be made:

1. Further research is needed to determine how Kentucky Family and Consumer Sciences Education teachers determine what their class names will be, why they chose names that are not on the Valid Course List, and how they determine what curriculum will be taught.
2. A study of how other state's FCS teachers name their courses and select their curriculum would be useful to address the "branding" issue that continues to plague the FCS profession.
3. A comparison of technology literacy, use, and access of FCS teachers in Kentucky and nationally with other CTE teachers and academic core teachers may assist schools in equalizing resources and access to technology.
4. As technology continues to develop at a fast pace, research on systems of resource allocation in schools for purchasing technology tools and professional development on literacy for those tools may provide information on how to better serve teachers in the use of new and innovative technologies.
5. Research on teacher education programs for FCS and CTE on what technology competencies are taught across states and nationally may assist in determining where the advances are and where the pre-service teachers are already proficient.
6. Research on what level of literacy, use, and access secondary students have in their home and school may assist teacher education programs to develop high levels of these skills in their future teachers to keep up with their students.
7. Reevaluate and tighten the instrument for replication.

As you can see, there are a lot of areas for further research that can be applied to both FCS education, CTE, and academic core areas. By promoting technology through teacher preparation programs and through professional development, teachers will be better able to use various types of technology to promote learning within their classrooms.

Appendices

Appendix A

Kentucky Teacher Standards

1. Operates a multimedia computer and peripherals to install and use a variety of software.
2. Uses terminology related to computers and technology appropriately in written and verbal communication.
3. Demonstrates knowledge of the use of technology in business, industry, and society.
4. Demonstrates basic knowledge of computer/peripheral parts and attends to simple connections and installations.
5. Creates multimedia presentations using scanners, digital cameras, and video cameras.
6. Uses the computer to do word processing, create databases and spreadsheets, access electronic mail and the internet, make presentations, and uses other emerging technologies to enhance professional productivity and support instruction.
7. Uses computers and other technologies such as interactive instruction, audio/video conferencing, and other distance learning applications to enhance professional productivity and support instruction.
8. Requests and uses appropriate assistive and adaptive devices for students with special needs.
9. Designs lessons that use technology to address diverse student needs and learning styles.
10. Practices equitable and legal use of computers and technology in professional activities.
11. Facilitates the lifelong learning of self and others through the use of technology.
12. Explores, uses, and evaluates technology resources: software, applications, and related documentation.
13. Applies research-based instructional practices that use computers and other technology.

14. Uses computers and other technology for individual, small group, and large group learning activities.
15. Uses technology to support multiple assessments of student learning.
16. Instructs and supervises students in the ethical and legal use of technology.

Appendix B

Questionnaire

July 23, 2007

Dear Kentucky FCS teacher,

You are invited to participate in a research project seeking to determine if a relationship exists between computer literacy and use of technology, as well as if a relationship exists between teachers' access to technology and their use of technology in Family and Consumer Sciences Education classrooms in the state of Kentucky. The project is being conducted by Dana Jenkins, graduate student from the University of Kentucky, Department of Community and Leadership Development. The results of this questionnaire will be presented in my master's thesis.

All you need to do is complete this short questionnaire, which should take approximately 5 minutes. Your participation is voluntary and you may chose to skip any questions within the questionnaire. If you do not wish to participate, simply discard the questionnaire. Responses will be completely anonymous; your name will not appear anywhere on the survey. Completing and returning the questionnaire constitutes your consent to participate.

Keep this letter for your records. If you have any questions regarding the research, contact Dana Jenkins at dana.jenkins@uky.edu or (573) 578-9678. You may also contact Dr. Cheryl Mimbs at camimb2@email.uky.edu or (859) 257-1210. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky at 859-257-9428 or toll free at 1-866-400-9428.

Thank you again for your help.

Sincerely,

Dana Jenkins
Graduate Student
FCS Education

Cheryl Mimbs
Assistant Professor
FCS Education

Tracy Kitchel
Assistant Professor
Agricultural Education

Computer Literacy, Access and Use of Technology in the Family and Consumer Sciences Classroom



UNIVERSITY OF KENTUCKY

College of Agriculture
School of Human Environmental Sciences

Purpose of the Study

The purpose of this study is to determine if a relationship exists between Family and Consumer Sciences Education teachers' computer literacy and their use of technology in the classroom, as well as if a relationship exists between Family and Consumer Sciences Education teachers' access to technology and their use of technology in the classroom.

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Instructions

For the following statements, please respond by **circling** the response that best describes your opinion of each item.

Sample Question

<p>Item</p> <p>Circle your responses</p>	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1. My computer is up-to-date.	1	2	3	4	5	6
This respondent indicated that they slightly agree with the above statement.						

Part I: Use of Technology

<p style="text-align: center;">Item Circle your responses</p>	Never	Not Very Frequently	Rarely	Occasionally	Very Frequently	Always
1. I use email on a regular basis.	1	2	3	4	5	6
2. I utilize word processing to develop materials for class.	1	2	3	4	5	6
3. I use presentation software (Microsoft Word, PowerPoint, etc.) to develop lessons/units.	1	2	3	4	5	6
4. I use presentation hardware (Projector, Smart Board, etc.) to present lessons/units.	1	2	3	4	5	6
5. I keep track of grades using a computer.	1	2	3	4	5	6
6. I utilize various Internet research tools.	1	2	3	4	5	6
7. I create multimedia presentations using a scanner.	1	2	3	4	5	6
8. I create multimedia presentations using a digital camera.	1	2	3	4	5	6
9. I create multimedia presentations using a video camera.	1	2	3	4	5	6
10. I use the computer for word processing.	1	2	3	4	5	6
11. I use the computer to create databases.	1	2	3	4	5	6
12. I use the computer to create spreadsheets.	1	2	3	4	5	6
13. I use the computer to access email.	1	2	3	4	5	6
14. I use the computer to access the Internet.	1	2	3	4	5	6
15. I use the computer to create presentations.	1	2	3	4	5	6
16. I use various technologies to support classroom instruction.	1	2	3	4	5	6

Part II: Computer Literacy

Item Circle your responses	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. I have a basic knowledge of computers.	1	2	3	4	5	6
2. I have avoided computers because they are unfamiliar to me.	1	2	3	4	5	6
3. I have a working knowledge of computer terminology.	1	2	3	4	5	6
4. I understand the technical aspects of computers.	1	2	3	4	5	6
5. I feel secure about my ability to interpret a computer manual.	1	2	3	4	5	6
6. I feel confident about using computers.	1	2	3	4	5	6
7. I know there are different Internet research tools (Google, Yahoo, etc.) available to use.	1	2	3	4	5	6

Part III: Access

Item Circle your responses	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. I have access to a television.	1	2	3	4	5	6
2. I have access to DVD/VCR.	1	2	3	4	5	6
3. I have access to a projector.	1	2	3	4	5	6
4. I have access to a digital camera.	1	2	3	4	5	6
5. I have access to a full page scanner.	1	2	3	4	5	6
6. I have access to a laser printer.	1	2	3	4	5	6
7. I have access to a desktop computer.	1	2	3	4	5	6
8. I have access to a laptop computer.	1	2	3	4	5	6
9. I have access to presentation software.	1	2	3	4	5	6
10. I have access to the internet in my school.	1	2	3	4	5	6
11. The internet is reliable at my school.	1	2	3	4	5	6
12. I have an adequate amount of technology for the number of students in my classes.	1	2	3	4	5	6
13. I have access to effective instructional software for the courses I teach.	1	2	3	4	5	6

Part IV: Demographics

Please circle or write in the appropriate responses to the following demographic questions.

1. What is your age?
 - a. 20-25
 - b. 26-30
 - c. 31-39
 - d. 40-49
 - e. 50-59
 - f. 60 and over
2. What is your gender?
 - a. Male
 - b. Female
3. How many teachers are in your Family and Consumer Sciences program?

4. How many years have you taught Family and Consumer Sciences Education as of the 2006-2007 school year? _____
5. What is your highest degree received?
 - a. Rank III
 - b. Rank II
 - c. Rank I
 - d. Other: _____
6. What courses will you teach in 2007-2008?

7. At which institute did you receive your initial certification?
 - a. Eastern Kentucky University
 - b. University of Kentucky
 - c. Morehead State University
 - d. Western Kentucky State University
 - e. Murray State University
 - f. Berea College
 - g. Northern Kentucky University
 - h. Other: _____

If you have any additional comments, please write them in the space provided.

Thank You

I would like to take this time to thank you for choosing to participate in this study. The results of this study will be used to determine what relationships might or might not exist between the Family and Consumer Sciences Education teachers' computer literacy and their use of technology in the classroom, as well as whether or not there is a relationship between Family and Consumer Sciences Education teachers' access to technology and their use of technology in the classroom.

Appendix C

Instrument Items and Sources

Use of technology

- I use email on a regular basis (*Peake, Briers, & Murphy, 2005; Alston, Miller, & Williams, 2003*)
- I utilize word processing to develop materials for class (*Peake, Briers, & Murphy, 2005*)
- I use presentation software to develop lessons/units (*Peake, Briers, & Murphy, 2005*)
- I use presentation hardware to present lessons/units (*Peake, Briers, & Murphy, 2005*)
- I keep track of grades using a computer (*Croxall & Cummings, 2000*)
- I utilize various Internet research tools (*Mason & McMorrow, 2006*)
- I create multimedia presentations using a scanner (*KY Teacher standards*)
- I create multimedia presentations using a digital camera (*KY Teacher standards*)
- I create multimedia presentations using a video camera (*KY Teacher standards*)
- I use the computer for word processing (*KY Teacher standards*)
- I use the computer to create databases (*KY Teacher standards*)
- I use the computer to create spreadsheets (*KY Teacher standards*)
- I use the computer to access email (*KY Teacher standards*)
- I use the computer to access the Internet (*KY Teacher standards*)
- I use the computer to create presentations (*KY Teacher standards*)
- I use various technologies to support classroom instruction (*KY Teacher standards*)

Computer literacy

- I have a basic knowledge of computers (*Mason & McMorrow, 2006*)
- I know there are different Internet research tools available to use (*Mason & McMorrow, 2006*)

- I have a working knowledge of computer terminology (*Mason & McMorrow, 2006*)
- I understand the technical aspects of computers (*Lokken, Cheek, & Hastings, 2003*)
- I feel secure about my ability to interpret a computer manual (*Lokken, Cheek, & Hastings, 2003*)
- I feel confident about using computers (*Lokken, Cheek, & Hastings, 2003*)
- I have avoided computers because they are unfamiliar to me (*Lokken, Cheek, & Hastings, 2003*)

Access

- I have access to a television (*Alston, Miller, & Williams, 2003*)
- I have access to DVD/VCR (*Alston, Miller, & Williams, 2003*)
- I have access to a projector (*Alston, Miller, & Williams, 2003*)
- I have access to a digital camera (*Alston, Miller, & Williams, 2003*)
- I have access to a full page scanner (*Alston, Miller, & Williams, 2003*)
- I have access to a laser printer (*Alston, Miller, & Williams, 2003*)
- I have access to a desktop computer (*Alston, Miller, & Williams, 2003*)
- I have access to a laptop computer (*Alston, Miller, & Williams, 2003*)
- I have access to presentation software (*Peake, Briers, & Murphy, 2005*)
- I have access to the internet in my school (*Alston, Miller, & Williams, 2003; Croxall & Cummings, 2000; Peake, Briers, & Murphy, 2005*)
- The internet is reliable at my school (*Redmann & Kotrlik, 2004*)
- I have an adequate amount of technology for the number of students in my classes (*Redmann & Kotrlik, 2004*)
- Availability of effective instructional software for the courses I teach (*Redmann & Kotrlik, 2004*)

Appendix D
Frequencies and Percentages for Computer Literacy Statements

Statement	<u>1</u>		<u>2</u>		<u>3</u>		<u>4</u>		<u>5</u>		<u>6</u>	
	f	%	f	%	f	%	f	%	f	%	f	%
I have a basic knowledge of computers.	1	1.1	1	1.1			9	9.6	31	33	52	55.3
I have avoided computers because they are unfamiliar to me.	5	5.3	5	5.3	4	4.3	9	9.6	15	16	56	59.6
I have a working knowledge of computer terminology.	1	1.1	2	2.2	3	3.2	25	26.9	45	48.4	17	18.3
I understand the technical aspects of computers.	6	6.4	9	9.6	12	12.8	34	36.2	25	26.6	8	8.5
I feel secure about my ability to interpret a computer manual.	4	4.3	6	6.4	18	19.1	33	35.1	25	26.6	8	8.5
I feel confident about using computers.					9	9.6	16	17	40	42.6	29	30.9
I know there are different Internet research tools (Google, Yahoo, etc.) available to use.					1	1.1	2	2.1	15	16	76	80.9

Appendix E
Frequencies and Percentages for Access to Various Types of Technology

Statement	<u>1</u>		<u>2</u>		<u>3</u>		<u>4</u>		<u>5</u>		<u>6</u>	
	f	%	f	%	f	%	f	%	f	%	f	%
I have access to a television.									1	1.1	93	98.9
I have access to DVD/VCR.							1	1.1	1	1.1	92	97.9
I have access to a projector.	3	3.2	1	1.1	1	1.1	5	5.3	7	7.4	77	81.9
I have access to a digital camera.	2	2.1	1	1.1	2	2.1	5	5.3	6	6.4	78	83
I have access to a full page scanner.	18	19.1	1	1.1	11	12	8	8.7	4	4.3	50	54.3
I have access to a laser printer.	10	10.9			5	5.4	5	5.4	10	10.9	62	67.4
I have access to a desktop computer.	2	2.1							2	2.1	90	95.7
I have access to a laptop computer.	11	11.7	2	2.1	4	4.3	8	8.5	7	7.4	62	66
I have access to presentation software.	3	3.2			3	3.2	7	7.4	13	13.8	68	72.3
I have access to the internet in my school.									4	4.3	88	95.7
The internet is reliable at my school.			1	1.1	4	4.4	10	11.1	17	18.9	58	64.4
I have an adequate amount of technology for the number of students in my classes.	13	14	17	18.3	10	10.8	14	15.1	13	14	26	28
I have access to effective instructional software for the courses I teach.			8	8.7	10	10.9	23	25	23	25	28	30.4

Appendix F
Frequencies and Percentages for Access to Various Types of Technology

Statement	<u>1</u>		<u>2</u>		<u>3</u>		<u>4</u>		<u>5</u>		<u>6</u>	
	f	%	f	%	f	%	f	%	f	%	f	%
I use email on a regular basis.							2	2.1	28	29.8	64	68.1
I utilize word processing to develop materials for class.					1	1.1	10	10.9	27	29.3	54	58.7
I use presentation software (Microsoft Word, PowerPoint, etc.) to develop lessons/units.	1	1.1			6	6.5	22	23.9	29	31.5	34	37
I use presentation hardware (Projector, Smart Board, etc.) to present lessons, units.	9	9.8	6	6.5	10	10.9	20	21.7	30	32.6	17	18.5
I keep track of grades using computers.							1	1.1	7	7.6	84	91.3
I utilize various internet research tools.	1	1.1			2	2.2	18	19.8	30	33	40	44
I create multimedia presentations using a scanner.	20	21.5	13	14	31	33.3	20	21.5	3	3.2	6	6.5
I create multimedia presentations using a digital camera.	15	16.5	12	13.2	21	23.1	24	26.4	13	14.3	6	6.6
I create multimedia presentations using a video camera.	25	26.9	13	14	30	32.3	19	20.4	3	3.2	3	3.2

Statement	<u>1</u>		<u>2</u>		<u>3</u>		<u>4</u>		<u>5</u>		<u>6</u>	
	f	%	f	%	f	%	f	%	f	%	f	%
I use the computer for word processing.	1	1.1					3	3.2	21	22.6	68	73.1
I use the computer to create databases.	13	14.3	18	19.8	3	3.3	23	25.3	19	20.9	15	16.5
I use the computer to create spreadsheets.	12	13.2	15	16.5	14	15.4	19	20.9	16	17.6	15	16.5
I use the computer to access email.									9	9.8	83	90.2
I use the computer to access the internet.							2	2.2	11	11.8	80	86
I use the computer to create presentations.	4	4.3	4	4.3	4	4.3	18	19.4	22	23.7	41	44.1
I use various technologies to support classroom instruction.					4	4.3	23	24.7	38	40.9	28	30.1

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Professional Experience

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